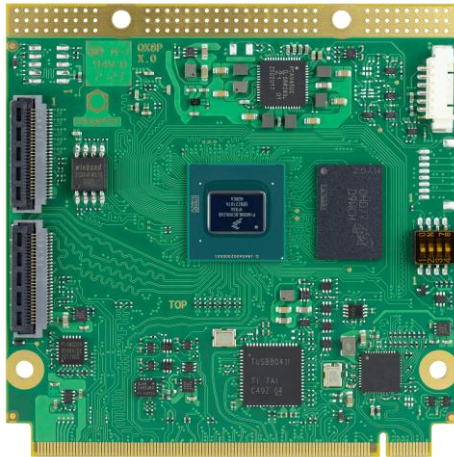


# NXP i.MX 8M Plus for Industry 4.0 & AI

## conga-QMX8-Plus

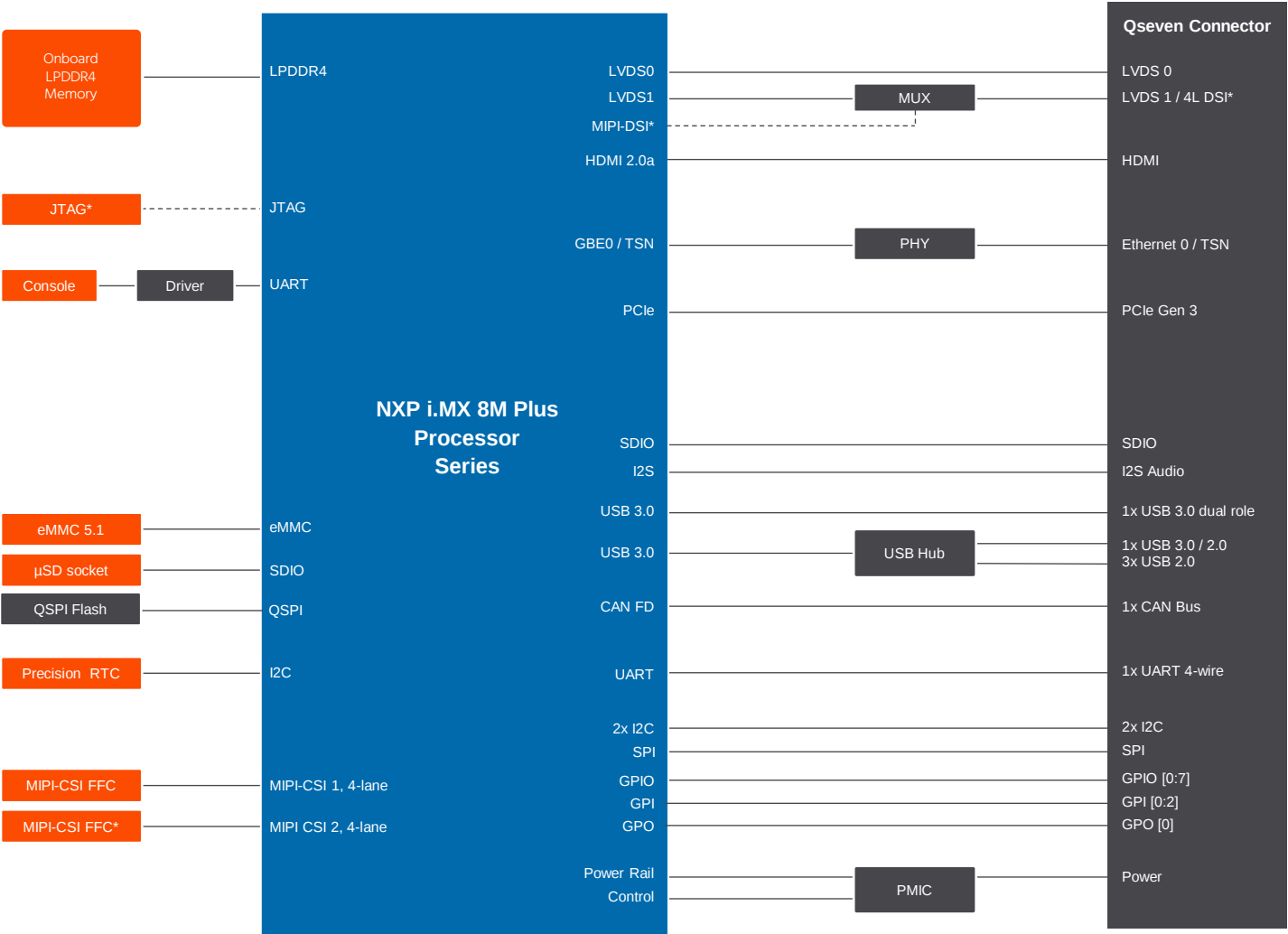


- NXP i.MX 8M Plus 14nm processor series with ARM 4-Core Cortex-A53 / M7 + NPU
- Enhanced AI, Machine Learning and Vision capabilities featuring NPU and integrated camera ISP's
- Ultra low power architecture with 2-5W
- Extended longevity up to 15 years
- Temperature range up to -40°C .. +85°C



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| Form factor           | Qseven Specification 2.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
| CPU SoC               | <div><div><div>NXP i.MX 8M Plus Processor Cores</div></div><div><div><div></div><div>i.MX 8M Plus Quad (consumer)</div></div><div><div></div><div>i.MX 8M Plus Quad (industrial)</div></div></div><div><div>ARM Cortex-A53</div><div>4x @ 1.8 GHz 64bit</div><div>4x @ 1.6 GHz 64bit</div></div><div><div>ARM Cortex-M7</div><div>1x @ 800MHz</div><div>1x @ 800MHz</div></div><div><div>NPU</div><div>1x up to 2.3 TOPS</div><div>1x up to 2.3 TOPS</div></div><div><div>GPU</div><div>GC7000UL/GC520L</div><div>GC7000UL/GC520L</div></div></div> |  |  |  |  |
| DRAM                  | Up to 6 GByte onboard LPDDR4 memory   4000 MT/s   inline ECC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |
| AI & Machine Learning | Neural Processing Unit (NPU) with up to 2.3 TOPS   NXP eIQ Machine Learning SW tools and libraries                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |
| Ethernet              | 1x Gbit Ethernet with IEEE 1588 and TSN Support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| I/O Interfaces        | 1x dual-role USB 3.0   3x USB 2.0   1x USB 3.0   1x SDIO 3.0   1x onboard µSD card socket   1x PCIe 3.0   2x I <sup>2</sup> C   1x SPI<br>1x UART with Handshake   1x CAN FD   12x GPIOs                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
| Mass Storage          | eMMC 5.1 up to 128 GByte   SPI NOR Flash up to 32 MByte                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |
| Sound                 | 1x I <sup>2</sup> S   HiFi 4 DSP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |
| Graphics              | Integrated in SoC   GC7000UL 3D graphics with 2 high performance vec4 shaders   GC520L 2D graphics<br>VPU up to 1080p60 H.265/H.264 decoding and encoding   OpenGL ES 3.1   Vulkan   OpenCL 1.2 FP   OpenVG 1.1<br>2 independent displays                                                                                                                                                                                                                                                                                                           |  |  |  |  |
| Video Interfaces      | 1x dual channel 24-bit LVDS   1x HDMI 2.0a   1x MIPI-DSI 4-lane shared with second LVDS channel (optional)<br>Up to 2x MIPI-CSI 4-lane onboard connectors   2x integrated Image Signal Processors (ISP) for cameras with up to 12 MP resolution                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| Features              | Watchdog Timer   Cortex-A53 Console   optional JTAG debug interface   High Precision Real Time Clock                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |
| Security              | Cryptographic Acceleration and Assurance Module (CAAM)   Resource Domain Controller   ARM®TrustZone®<br>High Assurance Boot support   Encryption Engine AES-128/192/256, 3DES, ARC4, RSA4096, TRNG<br>SHA-1, SHA-2, SHA-256, MD-5   RSA-1024, 2048, 3072, 4096 and secure key storage   side channel attack resistance                                                                                                                                                                                                                              |  |  |  |  |
| Boot Loader           | U-Boot boot loader                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |
| Operating Systems     | Linux, Yocto Project   Android                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| Power Consumption     | Typical application 2-5W @ 5V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |  |
| Temperature Range     | Operating Temperature Range: 0 to +60°C commercial grade<br>-40 to +85°C industrial grade<br>Storage Temperature Range: -40 to +85°C                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |
| Humidity              | Operating: 10 - 90% r. H. non cond. Storage: 5 - 95% r. H. non cond.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |
| Size                  | 70mm x 70 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |

# conga-QMX8-Plus | Block Diagram



\* Assembly Option

# conga-QMX8-Plus | Order Information

| Article                                         | PN       | Description                                                                                                                                                                                                                                 |
|-------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| conga-QMX8-Plus/QC-4G eMMC16                    | 016600   | Qseven module with low-power 14nm NXP i.MX 8M Plus Quad processor. Features 4x ARM® Cortex®-A53 @ 1.8GHz +1x ARM® Cortex®-M7 + NPU, 4GB onboard LPDDR4 memory and 16GB onboard eMMC. Commercial temperature range from 0°C to 60°C.         |
| conga-QMX8-Plus/QC-2G eMMC16                    | 016601   | Qseven module with low-power 14nm NXP i.MX 8M Plus Quad processor. Features 4x ARM® Cortex®-A53 @ 1.8GHz +1x ARM® Cortex®-M7 + NPU, 2GB onboard LPDDR4 memory and 16GB onboard eMMC. Commercial temperature range from 0°C to 60°C.         |
| conga-QMX8-Plus/i-QC-4G eMMC16                  | 016620   | Qseven module with low-power 14nm NXP i.MX 8M Plus Quad processor. Features 4x ARM® Cortex®-A53 @ 1.6GHz +1x ARM® Cortex®-M7 + NPU, 4GB onboard LPDDR4 memory and 16GB onboard eMMC. Industrial grade temperature range from -40°C to 85°C. |
| conga-QMX8-Plus/i-QC-2G eMMC16                  | 016621   | Qseven module with low-power 14nm NXP i.MX 8M Plus Quad processor. Features 4x ARM® Cortex®-A53 @ 1.6GHz +1x ARM® Cortex®-M7 + NPU, 2GB onboard LPDDR4 memory and 16GB onboard eMMC. Industrial grade temperature range from -40°C to 85°C. |
| QMX8-Plus/HSP-T                                 | 016650   | Standard heatspreader for Qseven module conga-QMX8-Plus with NXP i.MX 8M Plus ARM processor. All standoffs are 2.5mm thread.                                                                                                                |
| QMX8-Plus/HSP-B                                 | 016651   | Standard heatspreader for Qseven module conga-QMX8-Plus with NXP i.MX 8M Plus ARM processor. All standoffs are with 2.7mm bore hole.                                                                                                        |
| conga-QEVAL/Qseven 2.0 ARM                      | 007005   | Evaluation carrier board for Qseven ARM modules.                                                                                                                                                                                            |
| conga-HDMI add-on card                          | 500025   | conga-HDMI add-on card is used for evaluation of the HDMI graphics interface of Qseven modules in combination with the congatec evaluation carrier board conga-QEVAL.                                                                       |
| RS232 adapter cable for conga-ARM modules       | 48000023 | RS232 adapter cable for congatec ARM modules console debug application.                                                                                                                                                                     |
| Basler dart camera daA3840-30mc                 | 44500041 | Basler dart BCON for MIPI camera module daA3840-30mc, 8Mpx, 30fps, 4 CSI2-Lanes, S-Mount.                                                                                                                                                   |
| FFC Basler dart BCON for MIPI, 200mm            | 10000399 | FFC 28 pin cable for Basler BCON dart cameras, 0,5mm pitch. compatible with 28 pin Hirose ZIF connector (PN: FH41-28S-0.5SH(05)                                                                                                             |
| Evetar Lens M118B0418IR F1.8 f4mm 1/1.8" - Lens | 10000429 | Evetar Lens M118B0418IR F1.8 f4mm 1/1.8" - Lens for Basler dart camera module daA3840-30mc                                                                                                                                                  |

# Mouser Electronics

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